

# **ASSOCIATION BETWEEN SERUM URIC ACID AND NON-ALCOHOLIC FATTY LIVER DISEASE AND ITS CORRELATION WITH LIVER FIBROSIS AS ASSESSED BY FIBROSCAN**

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## **ABSTRACT**

### **BACKGROUND:**

Non alcoholic fatty liver disease (NAFLD) is one of the common causes for chronic liver disease. NAFLD is diagnosed when daily alcohol consumption is  $\leq 30$  g/ day in men and  $\leq 20$  g/day in women and with exclusion of other causes of fatty liver such as viral hepatitis autoimmune hepatitis, steatogenic drugs, etc. It is widely known that increased serum uric acid levels often co-exist with insulin resistance, obesity. Inflammation and oxidative stress are hypothesized to be the essential link in this relationship. Recently, several observational studies suggest that hyperuricemia (serum uric acid (SUA) level  $> 7.0$  mg/dL in men and  $> 5.7$  mg/dL in women) is a risk factor for NAFLD among eastern Asian populations independent of the components of metabolic syndrome. Hence, this study done to find the association between serum uric acid and newly diagnosed NAFLD patients and to find its correlation with liver fibrosis which is assessed by Fibroscan.

### **AIMS & OBJECTIVE**

To determine the association between ultrasound defined NAFLD and serum uric acid and to find the correlation between serum uric acid level and severity of NAFLD by assessment of liver fibrosis by Fibroscan

## **MATERIALS AND METHODS**

**SETTING:** Department of General medicine and Govt Rajaji hospital  
**DESIGN OF STUDY:** Prospective case control study  
**DURATION OF STUDY:** March 2018 to August 2018.  
**INCLUSION CRITERIA:** All newly diagnosed cases of ultrasound defined NAFLD within age group of 25 to 65.  
**EXCLUSION CRITERIA:** Patients with alcohol consumption greater than 20gm/day in men & 10gm/day in women, HBsAg & Anti HCV positivity, Patients with history of chronic liver disease, coronary artery disease, chronic kidney disease, patients on diuretics, anti gout medications, anti retroviral therapy were excluded from the study.  
**METHOD:** 100 NAFLD case and 100 age and sex matched controls were selected based on inclusion/exclusion criteria. Clinical examination and relevant investigations such as FBS, ALT, AST, BMI, fasting triglycerides, systolic BP, Serum uric acid, fibroscan were done. The values are plotted in excel sheet & statistical analysis is done by One way ANOVA test and chi square test

## **RESULTS**

Both in cases and controls, most of them were in age group of 46 to 55 years of age. There was a higher incidence of NAFLD in males (56%) when compared with females (44%) in our study. The mean ALT level in our cases is 34.44 U/L while it is 30.39 U/L in control group. The mean AST level in NAFLD cases is 35.81 U/L while in the control group, the mean value is 34.28 U/L. There is a statistical significance between AST & ALT values ( $p < 0.05$ ) between cases and controls. The mean triglycerides level in NAFLD case is 184.19 mg/dL while it is 162.03mg/dL in control group. . The mean BMI in NAFLD cases is 24.46 kg/m<sup>2</sup> while it is 23.63 kg/m<sup>2</sup> in control group which again shows statistical significance ( $p < 0.05$ ) between two groups The mean FBS in case group is 93.86 mg/dL & the mean FBS value in control group is 88.03mg/dL. . The mean systolic BP in case group is 121.42mmHg while it is

116.52mmHg in control group. Again, there is a statistical significance of triglyceride level, FBS, BMI, SBP values between cases and control. This might indicate increase in prevalence of metabolic syndrome in NAFLD cases.

The mean serum uric acid levels in NAFLD cases is 6.43 mg/dL while it is 5.45mg/dL in control. In males, the mean serum uric acid level is 6.959 mg/dL in NAFLD cases while it is 5.875 in control group. In females, the mean serum uric acid level is 5.75 mg/dL while it is 4.93 in control group. There is high statistical significance ( $p < 0.001$ ) between cases and controls in all the above values. Hence our study shows there is higher prevalence of hyperuricemia in NAFLD cases in both males & females. In 100 NAFLD patients, Fibroscan was done and the Liver stiffness value  $> 7$  kPa was taken as a cut off value for fibrosis. The association between hyperuricemia and fibrosis is assessed by chi- square test. The chi square value is 4.127 and the p value is 0.042 ( $p < 0.05$ ) which is statistically significant.

## **CONCLUSION**

This study shows significant correlation between serum uric acid & NAFLD .Hence, this study shows that presence of hyperuricemia should alert the possibility of underlying non alcoholic fatty liver disease if significant alcohol consumption is ruled out. Several studies also supports this association. Also there is linear association between hyperuricemia and presence of liver fibrosis as assessed by fibroscan. Hence uric acid levels play a vital role in detection of NAFLD and its the severity. However further studies are needed to define this association

## **KEYWORDS**

Non alcoholic fatty liver disease, Non alcoholic steatohepatitis, Fibroscan, Hyperuricemia